

**REMARKS**

In view of the following discussion, the Applicants submit that none of the claims now pending in the application is unpatentable under the provisions of 35 U.S.C. §103. Thus, the Applicants believe that all of these claims are now in allowable form.

**I. REJECTION OF CLAIMS 1-5, 7-10, AND 21-28 UNDER 35 U.S.C. § 103**

**A. Claim 1**

Claim 1 stands rejected under 35 U.S.C. §103 as being unpatentable over the Harmer et al. article (“Mobile Aware Multimedia Applications for UMTS: The ACTS On The Move Project,” hereinafter “Harmer”) in view of the Kamei et al. article (“Community Organizer: Supporting the Formation of Network Communities through Spatial Representation,” hereinafter “Kamei”) and further in view of the George et al. patent (United States Patent No. 6,944,645, issued September 13, 2005, hereinafter “George”). The Applicants respectfully traverse the rejection.

Primarily, the Applicants respectfully submit that none of Harmer, Kamei, and George teaches or suggests the novel invention of creating a single (i.e., unified) feature vector based on a user's communication interest, on network attributes, and on application attributes, as recited by Applicants' independent claim 1.

By contrast, the alleged combination (as taught by Harmer) at best teaches creating three separate profiles, namely, a user profile, a terminal profile, and a network profile (Harmer, Page 540, “Mobile Application Support Environment – MASE”). The Examiner alleges in the Office Action that these three profiles form a data structure that is equivalent to a “single feature vector” because “these 3 obtained attributes are used and managed by a single manager” (Office Action, Page 3, emphasis in original). The Applicants respectfully disagree with the Examiner's line of reasoning.

The Applicants note that Harmer discloses the use of “a wide variety of functional areas which are implemented as ‘managers’” (Harmer, Page 540, “Mobile Application Support Environment – MASE”). One of these managers, referred to as a “System

Adaptability Manager,” “[m]anages user, terminal and network profiles” (Harmer, Page 541, Table 1). However, just because the same manager manages the three profiles, it does not mean that the manager combines the three profiles into a single data structure or feature vector, as claimed by the Applicants. In fact, the further disclosure of Harmer suggests the contrary. For example, Harmer discloses that the three profiles are updated individually (See, Harmer, Page 540, “Mobile Application Support Environment – MASE”: “Only the user profile can be updated via the Mobile-API. Terminal and network profiles are updated by MASE managers.”). If the profiles can be updated individually, then it follows that the profiles are not combined into a single data structure or otherwise dependent on each other. Thus, a single functional or computational entity that manages three individual data structures (profiles) is not equivalent to a single feature vector, as claimed by the Applicants. Moreover, the Applicants note that nowhere in Harmer is it actually disclosed that the three profiles are combined into a single data structure or feature vector.

Kamei teaches measuring or quantifying a user’s communication interest and presence individually, not as a single feature vector representative of both metrics. Moreover, neither of these feature vectors accounts for network or application attributes. Specifically, Kamei associates “the presence of a user as well as messages, chat rooms and URLs” with feature vectors (Kamei, Section 4.1, first paragraph). Kamei further discloses that “[t]he user’s interests are then also represented as a feature vector” (Kamei, Section 4.1, first paragraph). In other words, Kamei appears to teach the use of multiple feature vectors, each of which represents something different (e.g., the user’s presence or the user’s interests). Furthermore, as discussed above, none of these feature vectors accounts for network or application attributes. Thus, Kamei also fails to disclose representing a user by forming a single feature vector that is based on the user’s communication interest, network attributes, and application attributes, as claimed by the Applicants.

George teaches a method and system for customizing electronic communications. However, in a previous Office Action, the Examiner acknowledged that George (in combination with another reference) “do[es] not explicitly teach the

steps of: forming a single feature vector based on the communication interest, network attributes, and application attributes, wherein the single feature vector is used to cluster the user with one or more other users based on similarly-formed single feature vectors associated with one or more other users" (Office Action dated April 2, 2009, Page 5).

Thus, Kamei and George fail to bridge the gap in the teachings of Harmer, discussed above. As such, Harmer in view of Kamei and further in view of George fails to teach or suggest representing a user by forming a single feature vector that is based on the user's communication interest, network attributes, and application attributes, where this single feature vector may be used for the purposes of comparing two or more users for compatibility in a collaborative application, as claimed by the Applicants. Specifically, the Applicants' independent claim 1 positively recites:

1. A method of constructing a multi-type feature vector comprising:  
obtaining a communication interest of a user as represented by at least one of: a user request for a content update or a user subscription to a specific data item or to a set of proximal data sources;  
obtaining network attributes;  
obtaining application attributes; and  
forming a single feature vector based on the communication interest, network attributes, and application attributes,  
wherein the single feature vector is used to cluster the user with one or more other users based on similarly-formed single feature vectors associated with the one or more other users. (Emphasis added)

As discussed above, Harmer in view of Kamei and further in view of George fails to teach or suggest the novel invention of creating a single feature vector based on a user's communication interest, on network attributes, and on application attributes, as recited by Applicants' independent claim 1. Accordingly, the Applicants respectfully submit that independent claim 1 is not unpatentable over Harmer in view of Kamei and further in view of George and is allowable.

#### **B. Claims 2, 7, 9, 22, 24, and 26**

Claims 2, 7, 9, 22, 24, and 26 stand rejected under 35 U.S.C. §103 as being

unpatentable over the Solotorevsky et al. patent application (Patent Cooperation Treaty International Publication No. WO 03/043253, published May 22, 2003, hereinafter “Solotorevsky”) in view of George and further in view of the Cetintemel et al. article (“Self-Adaptive User Profiles for Large-Scale Data Delivery,” hereinafter “Cetintemel”). The Applicants respectfully traverse the rejection.

Primarily, the Applicants respectfully submit that none of Solotorevsky, George, and Cetintemel teaches or suggests the novel invention of creating a single (i.e., unified) feature vector based on a user's communication interest, on network attributes, and on application attributes, as recited by Applicants' independent claims 2 and 26.

The Examiner acknowledges in the Office Action that “The combined teachings of Solotorevsky and George do not explicitly teach the steps of: forming a plurality of feature vectors, one for each of the plurality of nodes, where each single one of the plurality of feature vectors is based on the user's communication interest, network attributes, and application attributes” (Office Action, Page 7). The Examiner submits, however, that the admitted gap in the teachings of Solotorevsky and George is bridged by Cetintemel. The Applicants respectfully disagree.

By contrast, Cetintemel discloses clustering one or more vectors that represent the same information into a single representative vector. Specifically, Cetintemel discloses building a user profile by clustering document vectors that represent documents that have been evaluated by a user (Cetintemel, Page 624, “Relevance Feedback”). Individual document vectors and representative vectors may then form profile vectors for the user profile. Thus, at best, Cetintemel teaches a single vector that represents a group of individual vectors, where the individual vectors all correspond to the same kind of information, namely, the user's assessment of a document as it relates to the user's interests. Cetintemel does not teach that vectors representing different kinds of information (e.g., a user's communication interests, network attributes, and application attributes) can be combined to form a single vector, however. More specifically, Cetintemel does not teach that the single representative vector includes information about network and application attributes. Thus, Solotorevsky in view of

George and further in view of Cetintemel fails to teach or suggest a single feature vector that is based on the user's communication interest, network attributes, and application attributes, as claimed by the Applicants. Specifically, the Applicants' independent claims 2 and 26 positively recite:

2. A method of clustering a multi-type vector space comprising:  
obtaining network attributes from a network having a plurality of nodes;  
obtaining application attributes of an application;  
obtaining user's communication interest as represented by at least one of:  
a user request for a content update or a user subscription to a specific data item  
or to a set of proximal data sources;  
forming a plurality of feature vectors, one for each of the plurality of nodes,  
where each single one of the plurality of feature vectors is based on the user's  
communication interest, network attributes, and application attributes; and  
clustering the plurality of nodes based on the plurality of feature vectors.  
(Emphasis added)

26. A computer readable storage medium containing an executable program  
for clustering a multi-type vector space, where the program performs steps  
comprising:  
obtaining network attributes from a network having a plurality of nodes;  
obtaining application attributes of an application;  
obtaining user's communication interest as represented by at least one of:  
a user request for a content update or a user subscription to a specific data item  
or to a set of proximal data sources;  
forming a plurality of feature vectors, one for each of the plurality of nodes,  
where each single one of the plurality of feature vectors is based on the user's  
communication interest, network attributes, and application attributes; and  
clustering the plurality of nodes based on the plurality of feature vectors.  
(Emphasis added)

As discussed above, Solotorevsky in view of George and further in view of Cetintemel fails to teach or suggest a single feature vector that is based on the user's communication interest, network attributes, and application attributes, as recited by Applicants' independent claims 1, 2, and 26. Accordingly, the Applicants respectfully submit that independent claims 1, 2, and 26 are not unpatentable over Solotorevsky in view of George and further in view of Cetintemel and are allowable.

Claims 7, 9, 22, and 24 depend, respectively, from independent claims 2 and 1

and recite at least all of the features recited in independent claims 1 and 2. As such, and for at least the reasons stated above with respect to independent claims 1 and 2, the Applicants respectfully submit that claims 7, 9, 22, and 24 are also not unpatentable over Solotorevsky in view of George and further in view of Cetintemel and are allowable.

### C. Claims 8 and 23

Claims 8 and 23 stand rejected under 35 U.S.C. §103 as being unpatentable over Solotorevsky in view of George and Cetintemel and further in view of the Grimm et al. patent (United States Patent No. 5,828,843, issued October 27, 1998, hereinafter “Grimm”). The Applicants respectfully traverse the rejection.

As discussed above, Solotorevsky in view of George and further in view of Cetintemel fails to teach or suggest a single feature vector that is based on the user's communication interest, network attributes, and application attributes, as recited by Applicants' independent claims 1 and 2. Moreover, the Examiner acknowledged in a previous Office Action that Grimm (in combination with George) “do[es] not explicitly teach the steps of: forming a single feature vector based on the communication interest, network attributes, and application attributes, wherein the single feature vector is used to cluster the user with one or more other users based on similarly-formed single feature vectors associated with one or more other users” (Office Action dated April 2, 2009, Page 5). Thus, Grimm fails to bridge this gap in the teachings of Solotorevsky, George, and Cetintemel. As such, the Applicants respectfully submit that independent claims 1 and 2 are also not unpatentable over Solotorevsky in view of George and Cetintemel and further in view of Grimm.

Claims 8 and 23 depend, respectively, from independent claims 2 and 1 and recite at least all of the features recited in independent claims 1 and 2. As such, and for at least the reasons stated above with respect to independent claims 1 and 2, the Applicants respectfully submit that claims 8 and 23 are also not unpatentable over Solotorevsky in view of George and Cetintemel and further in view of Grimm and are

allowable.

#### **D. Claims 3-4 and 27-28**

Claims 3-4 and 27-28 stand rejected under 35 U.S.C. §103 as being unpatentable over Solotorevsky in view of George and Cetintemel and further in view of the Johnson patent (United States Patent No. 6,078,946, issued June 20, 2000, hereinafter “Johnson”). The Applicants respectfully traverse the rejection.

As discussed above, Solotorevsky in view of George and further in view of Cetintemel fails to teach or suggest a single feature vector that is based on the user's communication interest, network attributes, and application attributes, as recited by Applicants' independent claims 2 and 26. Johnson fails to bridge this gap in the teachings of Solotorevsky, George, and Cetintemel. As such, the Applicants respectfully submit that independent claims 2 and 26 are also not unpatentable over Solotorevsky in view of George and Cetintemel and further in view of Johnson.

Claims 3-4 and 27-28 depend, respectively, from independent claims 2 and 26 and recite at least all of the features recited in independent claims 2 and 26. As such, and for at least the reasons stated above with respect to independent claims 2 and 26, the Applicants respectfully submit that claims 3-4 and 27-28 are also not unpatentable over Solotorevsky in view of George and Cetintemel and further in view of Johnson and are allowable.

#### **E. Claims 5 and 21**

Claims 5 and 21 stand rejected under 35 U.S.C. §103 as being unpatentable over Solotorevsky in view of George and Cetintemel and further in view of the Solotorevsky et al. patent application (United States Patent Application Publication No. 2005/0010571, published January 13, 2005, hereinafter “Solotorevsky 2”). The Applicants respectfully traverse the rejection.

As discussed above, Solotorevsky in view of George and further in view of Cetintemel fails to teach or suggest a single feature vector that is based on the user's

communication interest, network attributes, and application attributes, as recited by Applicants' independent claims 1 and 2. Solotorevsky 2 fails to bridge this gap in the teachings of Solotorevsky, George, and Cetintemel. In fact, Solotorevsky 2 is merely the U.S. National Phase entry of Solotorevsky, and, as such, adds nothing to the teachings of Solotorevsky, George, and Cetintemel. As such, the Applicants respectfully submit that independent claims 1 and 2 are also not unpatentable over Solotorevsky in view of George and Cetintemel and further in view of the Solotorevsky 2.

Claims 5 and 21 depend, respectively, from independent claims 2 and 1 and recite at least all of the features recited in independent claims 1 and 2. As such, and for at least the reasons stated above with respect to independent claims 1 and 2, the Applicants respectfully submit that claims 5 and 21 are also not unpatentable over Solotorevsky in view of George and Cetintemel and further in view of the Solotorevsky 2 and are allowable.

Moreover, if “[t]he combined teachings of Solotorevsky/George/Cetintemel do not explicitly teach wherein the method comprises the steps of forming network delay maps and on the forward capacity maps from the obtained network attributes, and such that clustering is based on the formed network delay maps and on forward capacity maps,” as acknowledged by the Examiner (See, Office Action, Pages 15-16), then the combined teachings of Solotorevsky/George/Cetintemel/Solotorevsky 2 also cannot teach these features (since, as discussed above, Solotorevsky 2 is merely the U.S. National Phase entry of Solotorevsky). Thus, the Applicants respectfully submit that claims 5 and 21 are not unpatentable over Solotorevsky in view of George and Cetintemel and further in view of the Solotorevsky 2 for these additional reasons.

#### F. Claim 10

Claim 10 stands rejected under 35 U.S.C. §103 as being unpatentable over Solotorevsky in view of George and Cetintemel and further in view of the Tang et al. patent application (United States Patent Application Publication No. 2005/0076137, published April 7, 2005, hereinafter “Tang”). The Applicants respectfully traverse the

rejection.

As discussed above, Solotorevsky in view of George and further in view of Cetintemel fails to teach or suggest a single feature vector that is based on the user's communication interest, network attributes, and application attributes, as recited by Applicants' independent claim 2. Tang fails to bridge this gap in the teachings of Solotorevsky, George, and Cetintemel. As such, the Applicants respectfully submit that independent claim 2 is also not unpatentable over Solotorevsky in view of George and Cetintemel and further in view of Tang.

Claim 10 depends from independent claim 2 and recites at least all of the features recited in independent claim 2. As such, and for at least the reasons stated above with respect to independent claim 2, the Applicants respectfully submit that claim 10 is also not unpatentable over Solotorevsky in view of George and Cetintemel and further in view of Tang and is allowable.

#### **G. Claim 25**

Claim 25 stands rejected under 35 U.S.C. §103 as being unpatentable over Harmer in view of Kamei and George and further in view of the Posey, Jr. patent n (United States Patent No. 7,184,444, issued February 27, 2007, hereinafter "Posey"). The Applicants respectfully traverse the rejection.

As discussed above, Harmer in view of Kamei and further in view of George fails to teach or suggest the novel invention of creating a single (i.e., unified) feature vector based on a user's communication interest, on network attributes, and on application attributes, as recited by Applicants' independent claim 1. Posey fails to bridge this gap in the teachings of Harmer, Kamei, and George. As such, the Applicants respectfully submit that independent claim 1 is also not unpatentable over Harmer in view of Kamei and George and further in view of Posey.

Claim 25 depends from independent claim 1 and recites at least all of the features recited in independent claim 1. As such, and for at least the reasons stated above with respect to independent claim 1, the Applicants respectfully submit that claim

25 is also not unpatentable over Harmer in view of Kamei and George and further in view of Posey and is allowable.

## **II. CONCLUSION**

Thus, the Applicants submit that all of the presented claims fully satisfy the requirements of 35 U.S.C. §103. Consequently, the Applicants believe that all of the presented claims are presently in condition for allowance. Accordingly, both reconsideration of this application and its swift passage to issue are earnestly solicited.

If, however, the Examiner believes that there are any unresolved issues requiring the issuance of a final action in any of the claims now pending in the application, it is requested that the Examiner telephone Kin-Wah Tong, Esq. at (732) 842-8110 so that appropriate arrangements can be made for resolving such issues as expeditiously as possible.

Respectfully submitted,

  
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